

WHAT IS CLAIMED IS:

1                   1.       A device for converting a digital pixel signal to an analog output signal  
2   having a target format, the device comprising:

3                   a pixel pipeline circuit configured to provide a pixel stream comprising digital  
4   pixel values;

5                   an encoder coupled to an output of the pixel pipeline circuit and configured to  
6   convert the pixel stream to digital sample values for a target analog signal representing the pixel  
7   stream in the target format, thereby generating a base data stream at a base sampling rate;

8                   a supersampling circuit coupled to an output of the encoder and configured to  
9   generate a supersampled data stream at a supersampling rate from the base data stream, the  
10   supersampling rate being higher than the base sampling rate; and

11                  a digital to analog converter coupled to an output of the supersampling circuit and  
12   configured to convert the supersampled data stream to an analog output signal.

1                   2.       The device of claim 1, wherein the supersampling rate is selected so as to  
2   provide substantial attenuation of a higher frequency echo in the analog output signal, the higher  
3   frequency echo occurring in a frequency band above a baseband of the analog output signal.

1                   3.       The device of claim 2, further comprising an electromagnetic interference  
2   (EMI) filter coupled to an output of the digital to analog converter and configured to  
3   substantially attenuate frequency components of the analog output signal above a maximum  
4   frequency.

1                   4.       The device of claim 3, wherein the supersampling rate is selected so as to  
2   substantially attenuate an echo of the analog output signal, the echo appearing in a frequency  
3   band between a baseband of the analog signal and the maximum frequency.

1                   5.       The device of claim 2, wherein the baseband of the analog output signal is  
2   determined with reference to a baseband for a standard definition television monitor.

1                   6.       The device of claim 2, wherein the baseband of the analog output signal is  
2   determined with reference to a baseband for a high definition television monitor.

1                   7.       The device of claim 1, wherein the encoder is further configured to  
2 respond to one or more control parameters, thereby enabling selection of one of a plurality of  
3 candidate formats as the target format.

1                   8.       The device of claim 7, wherein the plurality of candidate formats includes  
2 a standard definition television format and a high definition television format.

1                   9.       The device of claim 1, wherein the supersampling rate is substantially  
2 equal to twice the base sampling rate.

1                   10.      The device of claim 1, wherein the supersampling rate is substantially  
2 equal to four times the base sampling rate.

1                   11.      A device for converting a digital pixel signal to an analog output signal  
2 having a target format, the device comprising:

3                   a pixel pipeline circuit configured to provide a pixel stream comprising a first  
4 number of digital pixel values per line at a base pixel rate;

5                   a supersampling circuit coupled to an output of the pixel pipeline circuit and  
6 configured to generate a supersampled pixel stream comprising a second number of digital pixel  
7 values per line, the second number being greater than the first number, at a supersampling rate  
8 higher than the base pixel rate;

9                   an encoder coupled to an output of the supersampling circuit and configured to  
10 convert the supersampled pixel stream to digital sample values for a target analog signal  
11 representing the supersampled pixel stream in the target format, thereby generating a  
12 supersampled data stream at an enhanced sampling rate; and

13                  a digital to analog converter coupled to an output of the encoder and configured to  
14 convert the supersampled data stream to an analog output signal.

1                   12.      The device of claim 11, wherein the supersampling rate is selected so as to  
2 provide substantial attenuation of a higher frequency echo of the analog output signal, the higher  
3 frequency echo occurring in a frequency band above a baseband of the analog output signal.

1           13.    The device of claim 12, further comprising an electromagnetic  
2 interference (EMI) filter coupled to an output of the digital to analog converter and configured to  
3 substantially attenuate all frequencies of the analog output signal greater than a maximum  
4 frequency.

1           14.    The device of claim 13, wherein the supersampling rate is selected so as to  
2 substantially attenuate an echo of the analog output signal, the echo appearing in a frequency  
3 band between a baseband of the analog signal and the maximum frequency.

1           15.    The device of claim 11, wherein the encoder is further configured to  
2 respond to one or more control parameters, thereby enabling selection of one of a plurality of  
3 candidate formats as the target format.

1           16.    The device of claim 15, wherein the plurality of candidate formats  
2 includes a standard definition television format and a high definition television format.

1           17.    A video processing unit comprising:  
2           a pixel generator circuit configured to generate and store pixel data for a frame of  
3 an image;  
4           a pixel pipeline configured to retrieve the stored pixel data and to provide a pixel  
5 stream comprising digital pixel values at a base pixel rate;  
6           an encoder coupled to an output of the pixel pipeline and configured to convert  
7 the pixel stream to digital sample values for a target analog signal representing the pixel stream  
8 in a target format, thereby generating a base data stream at a base sampling rate;  
9           a supersampling circuit coupled to an output of the encoder and configured to  
10 generate a supersampled data stream at a supersampling rate from the base data stream, the  
11 supersampling rate being higher than the base sampling rate; and  
12           a digital to analog converter coupled to an output of the supersampling circuit and  
13 configured to convert the supersampled data stream to an analog output signal,  
14           wherein the supersampling rate is selected so as to provide substantial attenuation  
15 of a higher frequency echo in the analog output signal, the higher frequency echo occurring in a  
16 frequency band above a baseband of the analog output signal.

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1           18.    The video processing unit of claim 17, wherein the encoder is further  
2 configured to respond to one or more control parameters, thereby enabling selection of one of a  
3 plurality of candidate formats as the target format.

1           19.    The device of claim 18, wherein the plurality of candidate formats  
2 includes a standard definition television format and a high definition television format.

1           20.    A method for converting a digital pixel signal to an analog output signal  
2 having a target format, the method comprising:  
3           receiving a pixel stream comprising digital pixel values;  
4           encoding the pixel stream as a base data stream comprising digital sample values  
5 for a corresponding analog signal having the target format, wherein the encoding is performed at  
6 a base sampling rate;  
7           supersampling the base data stream at a supersampling rate, the supersampling  
8 rate being higher than the base sampling rate, thereby generating a supersampled data stream;  
9 and  
10          converting the supersampled data stream to an analog output signal,  
11          wherein the supersampling rate is selected so as to provide substantial attenuation  
12 of a higher frequency echo in the analog output signal, the higher frequency echo occurring in a  
13 frequency band above a baseband of the analog output signal.

1           21.    The method of claim 20, further comprising:  
2           selecting the target format from a plurality of candidate formats.

1           22.    The method of claim 21, wherein the plurality of candidate formats  
2 includes a standard definition television format and a high definition television format.